California Environmental Protection Agency
AIR RESOURCES BOARD

Proposed Technical Feasibility Analysis for the Renewable Electricity Standard

Public Workshop
December 14, 2009

Scope of Analysis

- ARB staff will conduct a technical feasibility analysis of its proposed regulation
- Analysis in cooperation with CEC, CPUC, and CAISO
- Analysis focus: 2010 to 2020 within CA & WECC
- Staff to consider effects of proposed regulation and feasibility of targets beyond the 2020 goal
- Staff to rely on technical analyses conducted by the energy agencies & input from stakeholders

Compliance Scenarios

- **Assessment to consider scenarios for attaining a 33% renewable standard based on:**
  - ► **Potential level of load to be served**
  - ► **Resource mixes**
  - ► **Potential generation & transmission build-out options**

- **Not all potential scenario options can be studied at the same level of rigor**

Compliance Scenarios

- **Compliance scenarios will strive to:**
  - ► **Identify incremental renewable generation needed**
  - ► **Environmentally preferred development locations**
  - ► **Transmission needs**
  - ► **Capital generation & transmission development costs**

- **Some scenarios may also evaluate:**
  - ► **Information relative to operational costs**
  - ► **System integration costs and impacts**
  - ► **GHG emissions**

Scenario Modeling

- CEC & CPUC compliance scenarios for 33% RPS assessment

- The scenarios or cases to be examined include:
  - ► 20% RPS scenario
  - ► 33% RES scenario

Scenario Modeling

- **Potential outputs derived from these cases:**
  - ► Renewable resource mix by technology and location
  - ► Portfolio cost (capital and installation)
  - ► Implementation assessment
  - ► Renewable resource zones selected
  - ► Conceptual transmission lines selected
  - ► Generation and transmission timelines
  - ► GHG emission implications
  - ► Grid reliability including system operational impacts

Scenario Modeling

- **Additionally, the 33% RES scenario will be assessed under three generic variations:**
  - ► **Energy efficiency**
  - ► **Renewable distributed generation**
  - ► **Combined heat and power (CHP) systems**
- **All Load cases will be based on the revised 2009 IEPR demand forecast:**
  - ► **High Load case**
  - ► **Low Net Load case**
  - ► **Mid Net Load case**

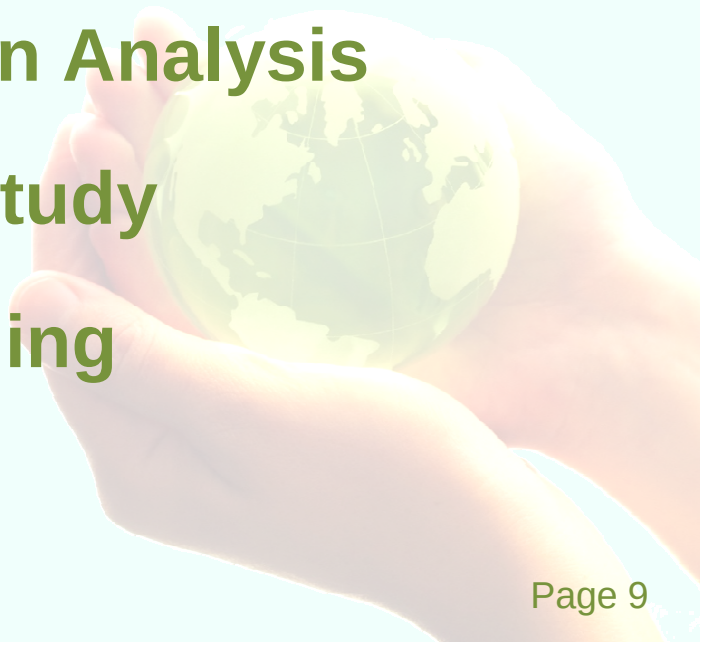
Other Feasibility Analyses

- Staff to update analysis from additional work conducted by CEC, CPUC, and CAISO
- Additional analyses to address potential implementation options from Concept Outline
  - ► Low Carbon Fuel Standard
  - ► Distributed Generation
  - ► Combined Heat and Power

Reference Studies

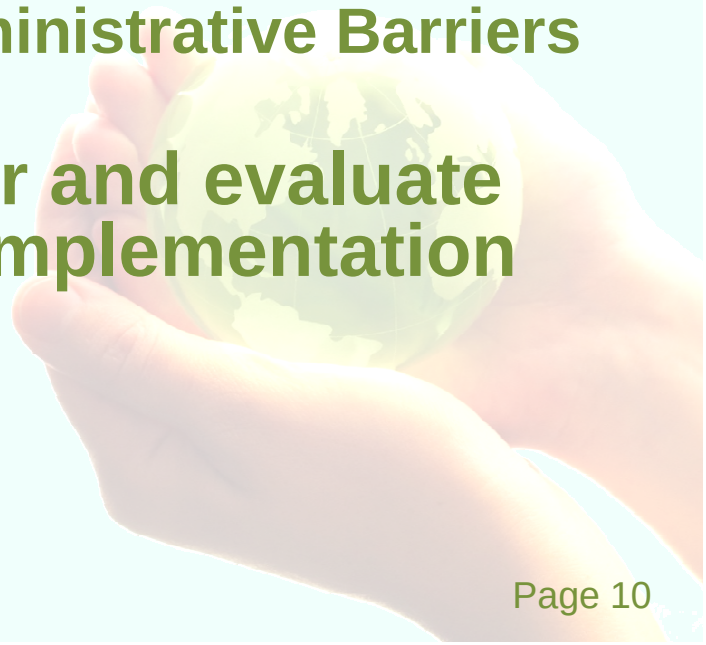
Documents and studies to be consulted to support the technical feasibility assessment include the following:

- **California Scoping Plan**
- **CEC Integrated Energy Policy Report (IEPR)**
- **CPUC 33% RPS Implementation Analysis**
- **CAISO 33% RPS Operational Study**
- **Planned Energy Agency Modeling**



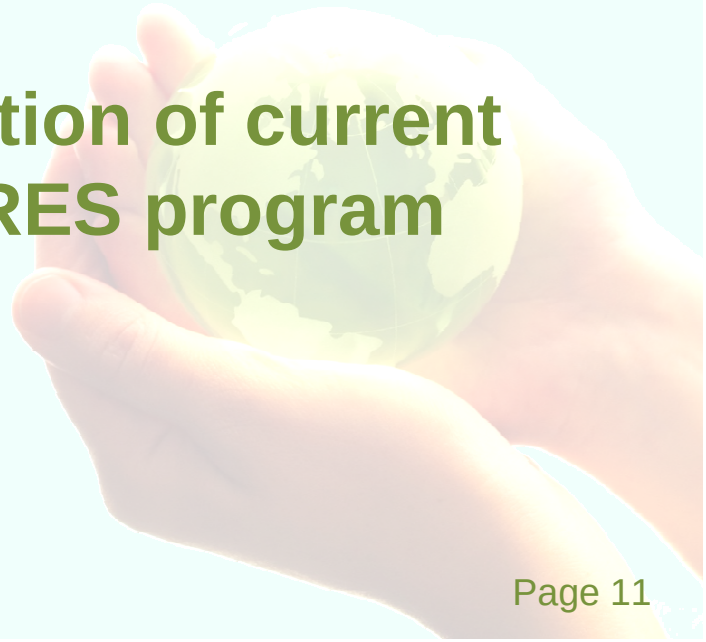
Other Feasibility Analyses

- **Other proposed technical components of the feasibility assessment that need addressing by RES regulation include:**
  - ► **Site and Resource Availability**
  - ► **Transmission Access/Grid Improvement Needs**
  - ► **Facility & Transmission Permitting & Development**
  - ► **Program Administration and Administrative Barriers**
- **This analysis will also consider and evaluate the role and structure of RES implementation beyond 2020**



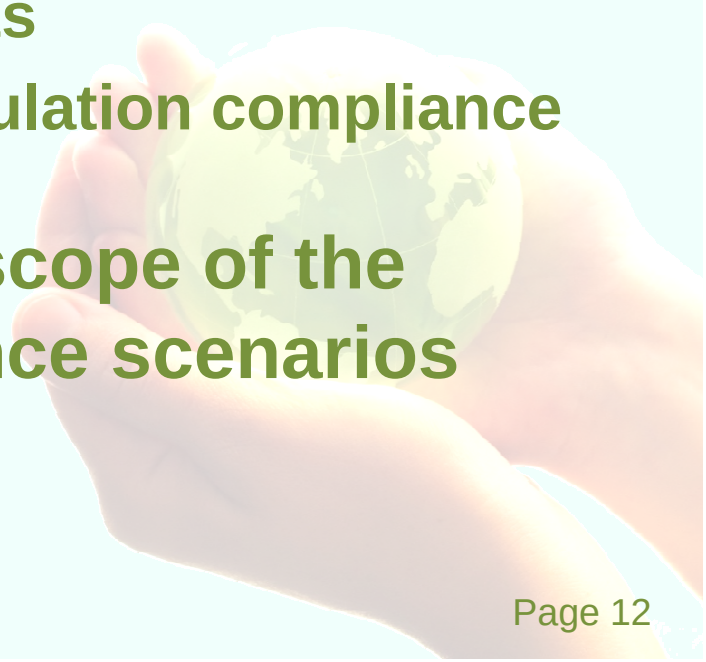
Other Feasibility Analyses

- Analysis to be designed to establish regulatory definition of & limitations on eligible resources, and why specific resources are included
- Analysis will describe current eligible RPS resources, & additional RES eligible resources
- Analysis will assume continuation of current RPS-eligible resources to the RES program



Other Comments

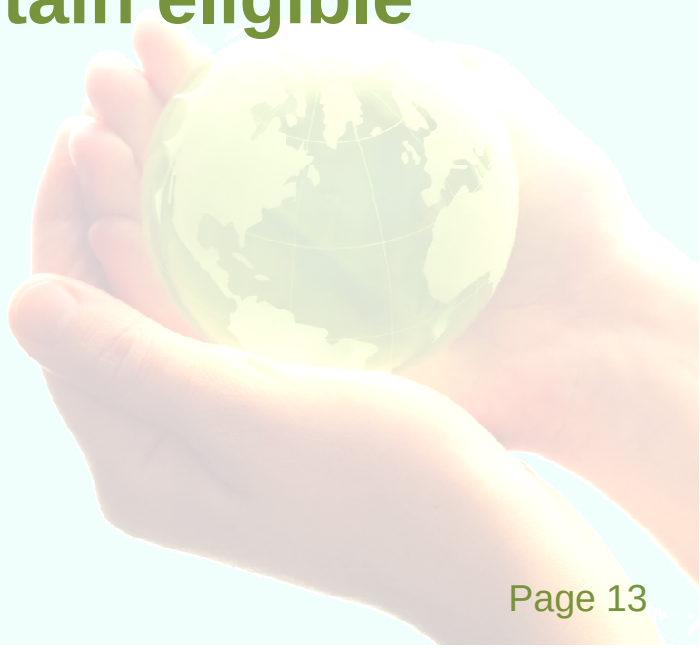
- ARB staff to determine whether current RPS program provisions should be modified for RES
- Staff to assess impact of potential changes to:
  - ► Eligibility rules
  - ► Use of RECs
  - ► Out-of-state delivery requirements
  - ► Potential metrics to measure regulation compliance
- Following is an outline of the scope of the analysis for potential compliance scenarios



Eligible Resources

- **Analysis will evaluate feasibility and potential effects of extending eligibility to certain additional renewable resources (e.g., AB 920)**

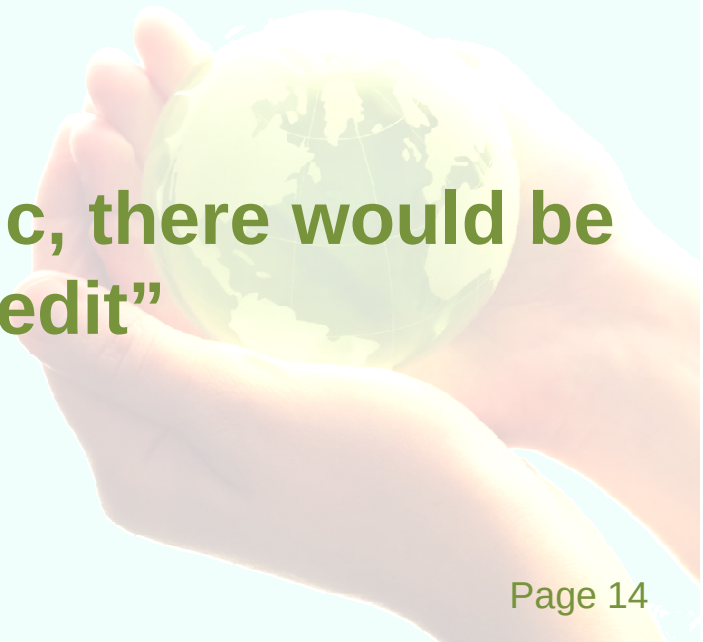
- **Analysis will evaluate effects of continuing existing RPS limitations on certain eligible resources under the RES**



Compliance Metrics

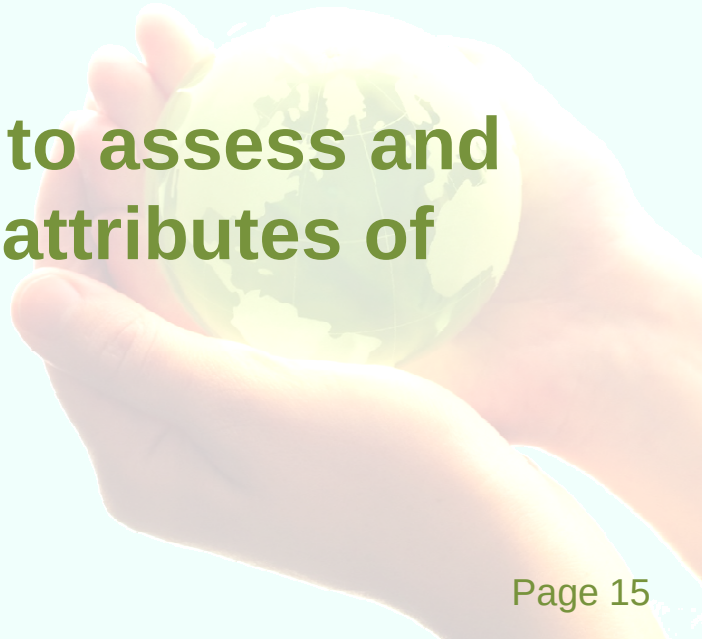
The Concept Outline identified two potential metrics for measuring compliance with RES

- **First is continued use of the RPS metric**
- **Second is a GHG reduction metric that converts MWh of eligible generation into tons of GHG reductions**
- **Under a GHG conversion metric, there would be a tradable "RES compliance credit"**



Compliance Metrics

- Metric options evaluated to consider role and responsibilities of CPUC and CEC in RES program administration
- Technical analysis will also evaluate feasibility of developing and assigning potential GHG reduction attributes
- Staff developing methodology to assess and rank average energy and GHG attributes of various renewable resources



Purchase and Use of RECs

- This component will evaluate technical & admin feasibility of (un)/bundled REC generation
- The analysis will consider issues related to tracking and trading of RECs and transaction mechanisms

Purchase and Use of RECs

- **The analysis will also attempt to:**

  ► Determine location, amount, and availability of REC resources within California and WECC territory

  ► Evaluate power development and transmission implications of expanded use of RECs

  ► Evaluate appropriateness and effects of imposing caps or other limits on use of RECs

RES Applicability

- Staff's Concept Outline proposed RES apply to all public and private entities serving load in CA
- Staff's evaluating feasibility & appropriateness of applying RES regulation to DWR and WAPA
- Staff's evaluating possible exemption threshold to provide relief for State's smallest utilities

RES Applicability

- **Staff will assess appropriateness of an exemption threshold**

- **Staff will also consider stakeholder comments regarding the feasibility or appropriateness of including DWR and WAPA as regulated parties**

Comments and Questions

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